

### **REMARKS**

This reply is responsive to the office action dated January 10, 2005.

The Office Action of January 10, 2005 has been carefully considered. Claims 1-4, 7-11 and 26 are pending; claims 5-6 and 24 have been cancelled; and claims 12-23 and 25 have been withdrawn. Claims 1, 8 and 26 have been amended. No new matter has been added. The present application is believed to be in condition for allowance.

In the office action, the examiner:

- rejected claims 1-4 and 7-11 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention;
- rejected 1-4 and 8-11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,550,051 to Spielau et al. ("the Spielau patent") in view of U.S. Patent No. 5,316,604 to Fell ("the Fell patent");
- rejected claims 1-4 and 7 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,451,528 to Krause ("the Krause patent") in view of the Fell patent;
- rejected claim 26 under 35 U.S.C. § 103(a) as being unpatentable over the Spielau patent in view of the Fell patent; or in the alternative over the Krause patent in view of the Fell patent and further in view of U.S. Patent No. 4,556,439 to Bannink, Jr. ("the Bannink patent").

### **Rejections Under 35 U.S.C. § 112, Second Paragraph**

Claims 1-4 and 7-11 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the examiner noted that the claims are claiming a composite joint, but the claims fail to provide the structure of the joint as set forth in the preamble. The only structure provided in the claim is that of a multi-layered composite.

Claims 1, 8 and 26 have been amended to positively recite a bolt or rivet for mechanically fastening a composite structural joint (support for which is provided at

paragraphs [4], [5] and [10] of Applicant's specification. Applicant, therefore, requests that the 35 U.S.C. § 112(2) rejections of these claims be withdrawn and that the claims be allowed. With respect to claims 2-4, 7; and 9-11, which depend from claims 1 and 8 respectively, applicants request that the 35 U.S.C. § 112(2) rejections of these claims be withdrawn for the reasons stated in regards to claims 1 and 8.

### **Rejections Under 35 U.S.C. §103(a)**

#### **The Spielau and Fell Patents**

Claims 1-4 and 8-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Spielau patent in view of the Fell patent. Applicant requests reconsideration. There is no teaching or suggestion in the Spielau or Fell patents for a bolted or riveted composite structural joint having all of Applicant's claimed limitations.

#### **No Motivation to Combine**

The examiner has not adduced a proper "motivation to combine" the Spielau and Fell patents that routinely might lead the person of ordinary skill in the art to arrive at applicant's invention from the cited references. The examiner noted that "[i]t would have been obvious at the time the invention was made to a person having ordinary skill in the art to use an adhesive film in the lamination of the facing sheets to the core motivated by the desire of strengthening the bonding of the layers and avoid delamination." (See Detailed Action, p.4, lines 12-14). Applicant finds nothing in either the Spielau or Fell patents that would provide a motivation for a selection and combination that might lead in the direction of the claimed invention, because nowhere in the Spielau or Fell patents is it stated or suggested that such an arrangement would be desirable or specifically capable of strengthening the bonding of the layers of Spielau and avoid delamination. Such a motivation can only be found in the present application. The teaching or suggestion to make the claimed combination must be found in the prior

art, and not based on the applicant's disclosure. See *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

The examiner concedes that the Spielau patent fails to teach the use of a polyolefin adhesive. (See Detailed Action, p. 4, line 9). And while the Fell patent does disclose a thermoplastic core bonded to facing sheets or skins using a thermoplastic film or layer, (see the Fell patent, col. 1, lines 12-21 and Figs. 1-3), the examiner has not indicated why one of ordinary skill in the art, in view of the Fell patent, would necessarily conclude that such adhesive layers would strengthen the bonding between the layers of the Spielau laminate, in which lamination of the core plies and outer plies with the use of pressure (15-80 bar) and heat cures the impregnating resin in the plies and effects uniform bonding. (See the Spielau patent, col. 6, lines 14-19). Spielau itself indicates that it is possible to effect perfect bonding by pressure and heat to form its laminate, without delamination. (See *id.*, col. 6, lines 25-30). The Fell patent does not suggest how or why such *additional* adhesive layers might routinely be expected to strengthen bonding between the resin-impregnated fiber layers of Spielau, particularly in light of the statement in the Spielau patent indicating that its lamination process provides "perfect bonding." (See *id.*) The distinguishing aspects of the invention are particularly and distinctly claimed. There is no basis of record to conclude the the invention claimed, as a whole, would have been obvious.

The examiner has not met the initial burden in establishing a *prima facie* case of obviousness. See MPEP §2143 ("[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation ... to modify the reference or to combine reference teachings."); see also *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998) (without a motivation to combine, a rejection based on a *prima facie* case of obviousness is improper). The teaching or suggestion to make the claimed combination must be found in the prior art, and not based on the applicant's disclosure. See *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

Furthermore, simply the fact that the references *can* be combined is not sufficient to establish *prima facie* obviousness unless the prior art also suggests the desirability of the combination. See *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990).

Moreover, claims 1 and 8 now recite a bolted or riveted mechanically fastened composite structural joint. At best, Spielau's drilled holes would receive small screws, and would not be considered a "structural" joint to one of ordinary skill in the art. Similarly, computer housings, and the like, cannot be equated with aircraft or motor vehicle body panels, and claim 9 would be clearly patentable over the examiner's suggested combination.

Structural applications are much more demanding than electrical applications: "[s]impler bolted joint [structural] configurations will typically attain no more than about a third of the laminate strength." (See paragraph [4] of Applicant's specification). Applicant's use of cushioning adhesive webs (claim 1); glass fabric of at least 400g/m<sup>2</sup>; and resistance to shear energy applied by a bolt or rivet (claim 26) would be helpful and important to structural composites, but would not be suggested by references such as the Spielau patent, which deal in electronics applications.

Thus, for the reasons stated above, applicant requests that the 35 U.S.C. § 103(a) rejections of claims 1 and 8 be withdrawn, and that these claims be allowed. With respect to claims 2-4 and 9-11, which depend from claims 1 and 8, and recite additional features of the invention, applicant requests that the 35 U.S.C. § 103(a) rejections of these claims be also withdrawn for the reasons stated.

#### **The Krause and Fell Patents**

Claims 1-4 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Krause patent in view of Fell patent. Applicant requests reconsideration.

Specifically, the office action fails to establish a *prima facie* case of obviousness for the additional reason that all of the limitations of claims 1-4 and 7 are not taught or suggested by the Krause or Fell patents.

The Krause or Fell patents, either alone or in combination, fail to disclose, teach or suggest the recited "... pair of ... fiber-containing layers, having ... a first tensile modulus ... [and] ... a fiber-containing core layer having ... a second tensile modulus that is lower than said first tensile modulus," required by independent claim 1.

Rather, the Krause patent discloses just the opposite arrangement, in which one or more high-strength (*i.e.* high tensile modulus) graphite fiber reinforced layers are embedded between or sandwiched between two overlying glass fiber containing resin matrices to achieve the requisite reinforcement, (see the Krause patent, col. 5, line 63 – col. 6, line 3), and would thus represent a teaching away from the invention of claims 1-4 and 7. The Fell patent fails to remedy this deficiency, because although it discloses a variety of potential fibers for reinforcing the individual layers, (see the Fell patent, col. 4, lines 3-13, 22-24), it does not explicitly disclose a "... pair of ... fiber-containing layers, having ... a first tensile modulus ... [and] ... a fiber-containing core layer having ... a second tensile modulus that is lower than said first tensile modulus," as required by independent claim 1.

Thus, the Krause or Fell patents, either alone or in combination, fail to disclose, teach or suggest all of the limitations of claim 1. Applicant, therefore, requests that the 35 U.S.C. § 103(a) rejection of claim 1 be withdrawn and that claim 1 be allowed. Regarding claims 2-4 and 7, which depend from claim 1 and which describe additional features of the invention, applicants request that these claims be allowed for the same reasons as stated for claim 1.

**Claim 26**

Claim 26 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the Spielau patent in view of the Fell patent, or in the alternative as unpatentable over the Krause patent in view of the Fell patent, and further in view of the Bannink patent.

**The Spielau Patent in View of the Fell Patent**

For the same reasons as stated above in relation to claims 1-4 and 8-11, the office action fails to establish a prima facie case of obviousness because it fails to provide a proper motivation to combine the Spielau and Fell patents, as required by 35 U.S.C. § 103(a). There is also no teaching for a bolted or riveted structural joint having all of Applicant's claimed limitations provided by these references. Thus applicant requests that the 35 U.S.C. § 103(a) rejection of claim 26 be withdrawn, and that this claim be allowed.

**The Krause Patent in view of the Fell and Bannink Patents**

For the same reasons as stated above in relation to claims 1-4 and 7 the office action fails to establish a prima facie case of obviousness for the additional reason that all of the limitations of claims 26 are not taught or suggested by the Krause, Fell or Bannink patents.

Specifically, the Krause, Fell and Bannink patents, either alone or in combination, fail to disclose, teach or suggest the recited "... a pair of ... fiber-containing layers having ... a first tensile modulus; and ... a fiber-containing core layer having ... a second tensile modulus that is lower than said first tensile modulus," as required by claim 26.

Rather, the Krause patent discloses just the opposite arrangement, in which one or more high-strength (*i.e.* high tensile modulus) graphite fiber reinforced layers are embedded between or sandwiched between two overlying glass fiber containing resin matrices to achieve the requisite reinforcement. (See the Krause patent, col. 5, line 63

– col. 6, line 3). The Fell patent fails to remedy this deficiency, because although it discloses a variety of potential fibers for reinforcing the individual layers, (see the Fell patent, col. 4, lines 3-13, 22-24), it does not explicitly disclose a "... a pair of ... fiber-containing layers having ... a first tensile modulus; and ... a fiber-containing core layer having ... a second tensile modulus that is lower than said first tensile modulus," as required by independent claim 26. The Bannink patent likewise fails to remedy the deficiency because it discloses multiple layers of the same fiber-containing material. (See the Bannink patent, col. 4, lines 12-13).


Thus, the Krause, Fell and Bannink patents, either alone or in combination, fail to disclose, teach or suggest all of the limitations of claim 26. Applicant, therefore, requests that the 35 U.S.C. § 103(a) rejection of claim 26 be withdrawn and that claim 26 be allowed.

In view of the above, reconsideration of this application is respectfully requested and an early notice of allowance is earnestly solicited.

The Commissioner is hereby authorized to charge any additional fees or credit any excess payment which may be associated with this communication to Duane Morris LLP Deposit Account **50-2061**.

Respectfully submitted,

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Jeffrey M. Chamberlain  
Registration No. 55,044

DUANE MORRIS LLP  
P.O. Box 5203  
Princeton, NJ 08540-5203  
609-631-2491 tel  
609-631-2401 fax

PTNV117370.1